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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,400	11/19/2003	Dureseti Chidambarao	FIS92003024US1	5307

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McGuireWoods LLP
Suite 1800
1750 Tysons Boulevard
McLean, VA 22102

EXAMINER

MITCHELL, JAMES M

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/715,400	Applicant(s) DURESETI (ml)	
	Examiner James M. Mitchell	Art Unit 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6,7,9-11,14,15 and 27 is/are rejected.
- 7) ☒ Claim(s) 2,5,8,12,13,16,17 and 28-31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/19/03,12/14/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to applicant's election filed August 24, 2005.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 6, 9, 10 11 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Miyano (U.S. 2004/0124476).

4. Miyano (Fig. 1-8) discloses:

(cl. 1) a method of manufacturing a structure, comprising the steps of:

forming shallow trench isolation (STI, 104) in a substrate, providing a first material on the substrate, providing a second material on the substrate (e.g. material that forms p/n-well); mixing the first material and the second material into the substrate by a thermal anneal process to form a first island and second island at a nFET region and a PFET region, respectively (Par. 0031), and forming a layer of material (102) on the first island and the second island having a lattice constant different than the first island and the second island, wherein the STI relaxes and facilitates the relaxation of the first island and the second island¹;

¹ Xiang teaches that STI relaxes strained silicon.

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(cl. 6, 10) and the STI has lower viscosity as temperature increases and is stable amorphous material ("insulation");

(cl. 9) and first and second islands have different relaxed lattice crystals (e.g. first and second islands different material);

(cl. 11) and the first and second material is deposited prior to mixing (e.g. implanting than annealing; Par. 0081) ;

(cl. 15) and first and second islands have a lattice greater or equal to silicon (e.g. p-well and n-well in silicon substrate).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Miyano (U.S. 2004/0124476).

7. Miyano discloses the elements stated in paragraph 4 of this office action and the claimed invention except for the annealing temperature. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the claimed temperature, since it has been held that where the general working conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (CCPA 1955).

8. Claims 4, 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyano (U.S. 2004/0124476) in combination with Yeo (U.S. 2004/0212035).

9. Miyano discloses the elements states in paragraph 4 of this office action, but does not show use of growing silicon on island.

10. Yeo shows growing a silicon film on island (260; Fig. 6a,b).

11. It would have been obvious to one of ordinary skill in the art of form a high stress film comprising silicon in order to enhance electron mobility as taught by Yeo (Par. 0063).

13. Claim 27 rejected under 35 U.S.C. 103(a) as being unpatentable over Shimuzu ("Local Mechanical...") in combination with Yeo (U.S. 2004/0212035).

14. Shimuzu discloses

(cl. 27) a method of manufacturing a semiconductor structure, comprising the steps of: forming a substrate, forming shallow trench isolation ("SGI") of high temperature stable amorphous material ("insulator") in the substrate (P. 19.4.2) and growing an Si layer ("SiN") on at least the first island, straining the Si layer in one of a compressive and tensile stress.

15. Shimuzu does not appear to show thermally annealing at least one material into the substrate to form a first island and a second island of mixed material.

16. Miyano (Fig. 1; Par. 0081) utilizes thermally annealing at least one material into the substrate to form a first island and a second island of mixed material.

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17. It would have been obvious to one of ordinary skill in the art to incorporate a process of thermally annealing at least one material into the substrate to form a first island and a second island of mixed material in order to form well as taught by Miyano (Par. 0081) and as required by Shimuzu ("p-well/n-well").

Allowable Subject Matter

18. Claims 2, 5, 8,12, 13 16, 17 and 28-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: the prior art does not disclose or make obvious annealing Germanium in to a substrate to form a first and second island. In contrast to the prior art in Forbes (U.S. 5,879,996) that shows the use of annealing Ge into a substrate to form a SiGe in a channel.

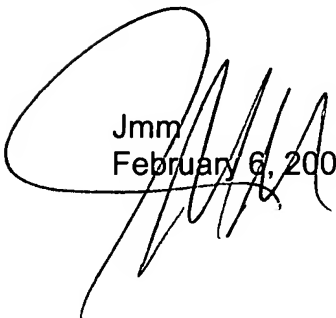
Conclusion

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jmm
February 6, 2006



CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800